CLAIMS

What is claimed is:

1. A die, comprising:
an insulation layer; and
an interconnect in the insulation layer, the interconnect having been formed with its grain structure adapted to reduce electron scattering.

2. The die of claim 1, wherein the interconnect is adapted to have a bamboo grain structure.

3. The die of claim 1, wherein the grain structure of the interconnect is adapted by localized annealing.

4. The apparatus of claim 1, wherein the interconnect is formed with a material selected from a group consisting of Cu, W, Au, Ag, Al, Cu alloy, W alloy, Au alloy, and Al alloy.

5. The die of claim 1, wherein the die further comprises a diffusion barrier layer, and the interconnect is formed on the diffusion barrier layer.

6. The die of claim 1, wherein the insulation layer having a thermal budget of less than or equal to about 450 degrees Celsius.

7. The die of claim 1, wherein the grain structure of the interconnect is adapted by localized annealing employing laser annealing.

8. The die of claim 1, wherein the grain structure of the interconnect is adapted by localized annealing employing resistive annealing.

9. A method, comprising:
forming an insulation layer on a die; and
forming an interconnect in the insulation layer, including adapting its grain structure to reduce electron scattering.

10. The method of claim 9, wherein said adapting comprises localized annealing the interconnect.

11. The method of claim 10, wherein the localized annealing comprises laser annealing using a selected one of a YAG, a CO2 or an Ar+ laser.

12. The method of claim 10, wherein the localized annealing comprises laser annealing using a CO2 laser operating at about 50 to about 200 Watts and the annealing time is in the range of about 1 to about 200 μsec.

13. The method of claim 9, wherein the forming of an interconnect comprises depositing a metal selected from a group consisting of Cu, W, Au, Ag, Al, Cu alloy, W alloy, Au alloy, and Al alloy.

14. The method of claim 9, wherein the forming of an interconnect is in an insulation layer having a thermal budget of less than or equal to about 450 degrees Celsius.

15. The method of claim 9, wherein the adapting comprises localized annealing of the interconnect by resistive annealing.

16. The method of claim 15, wherein the resistive annealing comprises coupling an electrode to the interconnect.

17. The method of claim 16, wherein the electrode is an electrode used for electroplating the interconnect.

18. The method of claim 16, further comprises passing an electrical pulse through the interconnect via the electrode.

19. The method of claim 9, wherein the forming of an interconnect further comprises forming a seed layer.

20. A system, comprising:

a die, including

an insulation layer; and

an interconnect imbedded in the insulation layer, the interconnect having its grain structure adapted to reduce electron scattering;

a bus coupled to the die; and

a networking interface coupled to the bus.

21. The system of claim 20, wherein the interconnect is adapted to have a bamboo grain structure.

22. The system of claim 20, wherein the grain structure of the interconnect is adapted by localized annealing employing laser annealing.

23. The system of claim 20, wherein the grain structure of the interconnect is adapted by localized annealing employing resistive annealing.

24. The system of claim 20, wherein the system is a selected one of a set-top box, a digital camera, a CD player, or a DVD player.